

Chemical Food Safety

**CHEMICAL FOOD SAFETY QUARTERLY REPORT
NO. 23**
POTENTIAL FOOD SAFETY INCIDENTS JULY TO SEPTEMBER 2008

| FSI No | Date | Regional Lab | Species | Toxin | Source |
|----------|----------|------------------|---------|----------|----------------|
| 2008- 61 | 03/07/08 | Starcross | Cattle | Botulism | Poultry litter |
| 2008- 62 | 14/07/08 | Aberystwyth | Cattle | Lead | ? Geochemical |
| 2008- 63 | 27/06/08 | Newcastle | Sheep | Copper | Feed |
| 2008- 64 | 03/07/08 | Preston | Cattle | Botulism | Poultry litter |
| 2008- 65 | 11/07/08 | Carrmarthen | Cattle | Lead | Paint |
| 2008- 66 | 04/07/08 | Shrewsbury | Cattle | Botulism | Poultry litter |
| 2008- 67 | 04/07/08 | Winchester | Cattle | Lead | Rubbish tip |
| 2008- 68 | 16/07/08 | Carrmarthen | Cattle | Lead | Battery |
| 2008- 69 | 16/07/08 | Winchester | Cattle | Lead | Paint |
| 2008- 70 | 24/07/08 | Shrewsbury | Duck | Lead | Lead shot |
| 2008- 71 | 17/07/08 | Penrith | Cattle | Copper | Rumen bolus |
| 2008- 72 | 18/07/08 | Sutton Bonington | Cattle | Lead | Battery |
| 2008- 73 | 05/08/08 | Preston | Cattle | Lead | ? Paint |
| 2008- 74 | 25/07/08 | Starcross | Cattle | Botulism | Poultry litter |
| 2008- 75 | 25/07/08 | Winchester | Cattle | Lead | Battery |
| 2008- 76 | 08/08/08 | Thirsk | Cattle | Botulism | Carcase |
| 2008- 77 | 14/08/08 | Truro | Cattle | Lead | Metallic |
| 2008- 78 | 15/08/08 | Sutton Bonington | Cattle | Lead | Geochemical |
| 2008- 79 | 27/08/08 | Leahurst | Cattle | Lead | Geochemical |
| 2008- 80 | 14/08/08 | Shrewsbury | Cattle | Botulism | Poultry litter |
| 2008- 81 | 14/08/06 | Thirsk | Cattle | Nitrate | Fertiliser |
| 2008- 82 | 19/08/08 | Langford | Cattle | Lead | Battery |
| 2008- 83 | 29/08/08 | Winchester | Cattle | Lead | Paint |
| 2008- 84 | 15/09/08 | Sutton Bonington | Cattle | Lead | Geochemical |

| | | | | | |
|-----------------|----------|-----------|--------|---------|-------|
| 2008- 85 | 04/09/08 | Langford | Cattle | Lead | Paint |
| 2008- 86 | 17/09/08 | Preston | Cattle | Lead | Paint |
| 2008- 87 | 26/09/08 | Starcross | Cattle | Unknown | Feed |

Lead poisoning incidents continued to occur as farmers moved cattle into fresh grazing fields. Bonfires, fly tipping and general waste dumping were all implicated. Most of these cases could be quickly resolved and frustratingly most could also be avoided with a little more due care and attention. One case was of a much more serious nature (FSI 2008/84) which once again raised the question: when this farm was setting up its business plan, aimed at producing grass-finished organic meat and produce to sell in the farm's own shop, was there an appropriate assessment to ensure that there were no contaminants that could affect cattle in the surrounding environment? As Britain tries to link up the environment and farming it is essential that this is addressed.

High lead soil areas may be effectively used for grazing if they are managed appropriately. The soil contains most of the lead that grazing stock eat, not the actual plant. This means farmers must minimise soil contamination of feed crops and soil ingestion. If necessary, where farms have very high lead soils, stock should not be "finished" on the high lead soil fields. They can be "finished" indoors on feed known to be safe, if necessary purchased, or sold as stores to finish elsewhere.

At this point we could discuss (at length) the bioavailability and the pharmacodynamics of different forms of geochemical lead, but we won't. All the geochemical cases referred to in this newsletter are sub-clinical residue issues rather than confirmed poisonings, but in previous newsletters there have been convincing cases of poisoning in both adult cattle and calves. This suggests that dose and bioavailability of lead ingested with soil are very variable.

Bioavailability of soil lead is probably an important determinant of risk. At present the soil guideline value for lead, which does not actually apply to agricultural land does not differentiate between different forms of lead. Geochemical food safety incidents (FSI) are an indicator of when the absorbed dose of lead is particularly high. The occurrence of actual geochemical animal lead poisonings is a marker of relative risk and may also include the relative risk to humans living, working and playing in these environments with high lead soils.

LEAD INCIDENTS

| Lead source | Nos. of cases* | Actual poisoning cases** | Animal species |
|--------------------|-----------------------|---------------------------------|-----------------------|
| Battery | 4 | 4 | Cattle 4 |
| Paint | 6 | 2 | Cattle 5 |
| Other | 3 | 2 | Cattle 2, Avian 1 |
| Geochemical | 4 | 0 | Cattle 4 |

* This column includes all cases above the VLA/FSA action concentrations. It reflects cases where tissue lead residues are likely to fall above the EU regulatory limit stated in the contaminant regulations.

** This column includes cases where lead poisoning is responsible for the clinical signs shown by the animal.

Lead incidents involving cattle

FSI 2008-62

A raised kidney lead concentration was detected in a suckler calf which died having shown vague nervous signs for 1-2 months prior to death. A kidney lead concentration of 26.2 $\mu\text{mol/kg}$ dry matter (DM), equivalent to 0.98 ppm wet matter (WM), was obtained (VLA/FSA action concentration for lead in offal is 0.5 ppm WM). There had been two other sudden deaths. The cause of death could not be established but was believed likely to be geochemical.

FSI 2008-65

A raised kidney lead concentration was obtained in a 6-week-old suckler calf which had been found dead. A kidney lead concentration of 23.9 $\mu\text{mol/kg}$ DM, equivalent to 0.98 ppm WM, was obtained. This was the only death in a group of 35 cows and calves. The actual cause of death was an acute interstitial pneumonia. The only source of lead found was lead paint on several field gate posts. The paint only contained 1029 ppm lead, insufficient to cause poisoning but possibly high enough to cause a lead residue.

FSI 2008-67

Lead poisoning was confirmed in a 10 month old beef fattener. A blood lead concentration of 7.57 $\mu\text{mol/l}$ was obtained (VLA/FSA action concentration for lead in blood is 0.48 $\mu\text{mol/l}$). The affected animal presented with clinical signs typical of lead poisoning which included nervous signs and blindness. Only one animal was affected from a group of 50. The animal had broken through a fence into a woodland area where fly tipping had occurred.

FSI 2008-68

Lead poisoning was diagnosed in a group of 36 suckler cows and calves at pasture. Two calves were found dead. The second carcass was submitted for post mortem examination. A kidney lead concentration of 2758.0 $\mu\text{mol/kg}$ DM, equivalent to 136.7 ppm WM, was obtained on analysis. The farmer searched the grazing field and found the remains of a burnt battery on an old bonfire site. There was evidence of disturbance by calves.

FSI 2008-69

Lead poisoning was diagnosed in a group of 30 suckler cows and six calves grazing an area of extensive military land. One cow had been found dead soon after the cows were turned out in June but this was not investigated. A second cow died in July. The second carcass was submitted for post mortem examination. Black particulate material with shiny metallic fragments was identified in the rumen content. A kidney lead concentration of 4938.0 $\mu\text{mol/kg}$ DM, equivalent to 223.0 ppm WM, was obtained on analysis. The source of lead was identified as three 5-gallon drums of discarded army grey paint. One of the drums had rusted and was leaking material similar to that seen in the rumen content.

FSI 2008-72

Lead poisoning was diagnosed in a group of 40 suckler cows with 40 calves aged about 6 weeks. A total of 6 calves died over a few weeks some exhibiting nervous signs. A kidney lead concentration of 2116.0 $\mu\text{mol/kg}$ DM, equivalent to 87.0 ppm WM, was obtained. The farmer reported finding 3 batteries which had been fly tipped on the pasture. There was evidence that the calves had licked and nibbled at the terminals.

FSI 2008-73

An elevated blood lead concentration at 0.88 $\mu\text{mol/l}$ was identified in a 6-month-old suckler calf which was exhibiting hypermetria and muscle tremors. Hypomagnesaemia was diagnosed and confirmed as the cause of nervous signs as the calf responded to treatment with magnesium. The source of the lead residue was uncertain but may have been associated with an old rusting painted drum lid to which the cattle had access.

FSI 2008-75

Lead poisoning was diagnosed in a 6-month-old beef calf. A kidney lead concentration of 1345.0 $\mu\text{mol/kg DM}$, equivalent to 66.8 ppm WM, was obtained. The calf was one of 6 to be affected with 3 dying, in a group of 16. The source of lead was a broken car battery which had been fly-tipped into the field.

FSI 2008-77

Lead poisoning was diagnosed in a 5-month-old suckler calf. A kidney lead concentration of 1655.0 $\mu\text{mol/kg DM}$, equivalent to 81.0 ppm WM, was obtained. Metallic fragments which had a lead content of 593363 ppm were detected in the reticulum. The calf was one of two to be affected in a group of 18 cows and 18 calves. Clinical signs were consistent with lead poisoning consisting of nervous signs, blindness, recumbency and terminal convulsions. No source of lead could be found in the field but the cattle were moved and no further cases occurred. A discarded battery would seem to be the most likely source in this case and the farmer was reminded to keep on looking.

FSI 2008-78

Elevated blood lead concentrations were detected in a group of suckler calves. Blood lead concentrations ranged from 0.34 to 0.94 $\mu\text{mol/l}$, insufficient to be poisoning but high enough for residue concerns. The calves were checked as part of investigation into the cause of five sudden deaths in calves over the preceding 2 months. The reason for these sudden deaths could not be confirmed however a visit confirmed exposure to a geochemical lead and close proximity to historic lead mine workings.

FSI 2008-79

An elevated kidney lead concentration was detected in a six-week-old suckler calf which was found dead. A kidney lead concentration of 77.4 $\mu\text{mol/kg DM}$, equivalent to 3.3 ppm WM, was obtained. The cause of death was confirmed at post mortem to be due to a septicaemia probably associated with trauma to the tongue. The source of lead was confirmed as geochemical, six soil sample were analysed and found to contain lead concentrations between 1634 and 21632 ppm. The grazing fields were close to a lead mining area but there were no known lead workings in the fields.

FSI 2008-82

Lead poisoning was diagnosed in a group of 15 suckler cows and calves. The cattle had been moved in to a recently purchased paddock which the farmer had mown prior to releasing the stock. Unfortunately and unwittingly the farmer mowed over three batteries but did not remove the remains. Three days later one calf was found dead and a second calf presented with clinical signs typical of lead poisoning. The dam of the first affected calf also presented with nervous signs and blindness. A blood lead concentration of 1.61 $\mu\text{mol/l}$ was obtained.

FSI 2008-83

Lead poisoning was diagnosed in three 5-week old suckler calves in a group of 6 cows and 3 calves. A kidney lead concentration of 3137.0 $\mu\text{mol/kg DM}$, equivalent to 142.0 ppm WM, was obtained in one calf and blood lead concentrations of 6.84 and 5.12 $\mu\text{mol/l}$ in two live affected calves. Small amounts of flaked material which had a lead content of 511513 and 11332 ppm respectively were detected in the rumen of the calf. The source of lead was traced to flaking paint on several doors to which the cattle had contact. The lead concentration of the door paint was 288498 ppm.

FSI 2008-84

A raised kidney lead concentration was detected in an eight month old finishing bullock which had been found dead in a group of 42. A kidney lead concentration of 87.0 $\mu\text{mol/kg DM}$, equivalent to 3.78 ppm WM, was obtained. The cause of death was confirmed at post mortem

to be blackleg. The farm is an organic farm with cattle, sheep and pigs and supplies a farm shop. All stock are finished outdoors on grass. Soil analysis was carried out from several parts of the farm with soil concentration ranging from 707 ppm in the pig field to 9170 ppm in the beef finishing field. A lump of leaded material found lying in one field was 625899 ppm lead. This was suspected to have originated from a old lead smelting site on the farm boundary. Investigations are on going and samples of meat and produce are being analysed.

FSI 2008-85

A raised kidney lead concentration was detected in a yearling beef fattener which died following nervous signs which included ataxia, blindness and convulsions. A kidney lead concentration of 18.6 $\mu\text{mol/kg DM}$, equivalent to 0.59 ppm WM, was obtained, insufficient to be associated with toxicity. Histopathology is pending. Autumn crocus plants were present in the vicinity that the cattle were grazing and plant poisoning was considered as a differential, however there was no suspicious plant remains observed in the rumen and no evidence on the ground of cattle having grazed the plants.

FSI 2008-86

A raised kidney lead concentration was detected in a non lactating close to calving dairy cow which died suddenly. A kidney lead concentration of 25.5 $\mu\text{mol/kg DM}$, equivalent to 1.17 ppm WM, was obtained, insufficient to be associated with toxicity. Hypomagnesaemia was the suspected cause of death. Initially the only source of lead in the cow's environment (a calving pen) was a leaded water pipe. It was thought possible that since the calving pen was seldom used that the first draw of water from stagnant water in the pipe may have contained a higher than normal concentration of lead. This hypothesis was tested and proved incorrect with a water concentration of 0.1 ppm being obtained on analysis. Later a paint sample on a door which the cow had been licking was analysed and a lead concentration of 1137 ppm obtained. Albeit still fairly low, this was much more likely to be the source of the lead residue.

Lead incidents involving poultry

FSI 2008-70

A raised kidney lead concentration was obtained in a 10-12 week old duckling which had died suddenly. The actual cause of death was Duck Viral Enteritis. A total of 10 ducklings died in a group of 22. Only one duckling was post mortemed and a kidney lead concentration of 46.3 $\mu\text{mol/kg DM}$, equivalent to 2.09 ppm WM was obtained. Lead shot was seen in the gizzard. The source of lead was thought to be an old bonfire site and/or a woodland area over which shooting occurred.

COPPER INCIDENTS

FSI 2008-71

Copper toxicity was diagnosed in an 11 week old suckler calf weighing 97 kg. Post mortem revealed jaundice and a blue colour to the rumen and intestine content. A liver copper concentration of 40,699 $\mu\text{mol/kg DM}$, equivalent to 587 ppm WM was obtained (FSA / VLA action concentration is 500 ppm). The animal was one of six to be dosed with a glass bolus containing copper, cobalt and iodine. This was the only calf affected. This is a new product which is designed for animals in excess of 100 kg. The calf was dosed about 6 weeks previously and would therefore have been underweight. There was no other source of copper except creep feed in the first few weeks of life. A suspected adverse reaction report was made to the Veterinary Medicines Directorate.

BOTULISM INCIDENTS

| FSI | Nos. affected | Type | Age | Direct/indirect | Results |
|--------|---------------|-------|----------------|-------------------------|------------------------------------|
| 08/61* | 8 | Dairy | Adult | Indirect poultry litter | <i>C.botulinum</i> type D organism |
| 08/64 | 5 | Dairy | Adult | Indirect poultry litter | No toxin and organism identified |
| 08/66 | 4 | Dairy | Adult | Indirect poultry litter | Toxin type D |
| 08/74 | 7 | Dairy | Adult | Indirect poultry litter | No toxin and organism identified |
| 08/76 | 3 | Beef | 4 to 16 months | Unknown | No toxin and organism identified |
| 08/80 | 2 | Diary | Adult | Direct poultry litter | Toxin type D |

* Other cases reported on several neighbouring farms

BOTULISM INCIDENTS

FSI 2008-61

Botulism was suspected to be the cause of recumbancy, paresis and death in eight adult dairy cattle in a group of 180. The cause of botulism was thought to be associated with the use of poultry litter on neighbouring fields. Six other farmers have also reported cases. The farmer verbally agreed to voluntary withhold clinically affected cattle from the food chain. The use of vaccination was being discussed.

FSI 2008-64

Botulism was suspected to be the cause of recumbancy and paresis in five adult dairy cattle in a group of 190. The cause of botulism was thought to be associated with poultry litter stacked on neighbouring fields. Carcasses were observed in the litter and Trading Standards were informed. The farmer verbally agreed to voluntary withhold the produce and carcasses of clinically affected cattle from the food chain. The use of vaccination was being discussed.

FSI 2008-66

Botulism was suspected to be the cause of ataxia, recumbancy and paresis in four adult dairy cattle in a group of 415. The cause of botulism was thought to be associated poultry litter spread on a neighbouring field about 10 meters away from the cow's grazing field.

FSI 2008-74

Botulism was suspected to be the cause of ataxia, recumbancy and paresis in seven adult dairy cattle in a group of 180. The cause of botulism was thought to be associated poultry litter stacked on the field that the cows were grazing. There had been a cluster of botulism cases in this part of the country the previous year associated with the same broiler litter supplier.

FSI 2008-76

Botulism was suspected to be the cause of recumbancy in 3 store cattle ranging in age between 4 and 16 months. The source was uncertain but may have been associated with a mammal or bird carcasse in a large pile of semi-composted ivy that was tipped in the field prior to the first case. Ivy poisoning was considered as a differential but ruled out as the clinical signs and post mortem findings were not supportive.

FSI 2008-80

Botulism was suspected to be the cause of weakness, hind limb stumbling and recumbancy in two adult dairy cattle in a group of 300. The cause of botulism was thought to be associated with poultry litter spread onto a neighbouring field in very windy conditions. Some of the litter was blown onto the cattle grazing field so that there was direct contact.

OTHER INCIDENTS

FSI 08-63

Copper toxicity was diagnosed in a finishing lamb at post mortem. The lamb was one of a group of 160 pedigree lambs that were being fed creep. The manufacturers of the creep had recently increased the copper content of the feed. The rest of the group were treated with ammonium molybdate drench. There were two issues 1) copper toxicity and high tissue copper residues and 2) the use of ammonium molybdate. The farmer agreed to observe a 28 day withdrawal in line with the use of veterinary products under 'the cascade' a risk management which allowed for both issues.

FSI 08-81

Nitrate toxicity was suspected to have caused the death of two adult suckler cows. The cows were found dead inside a shed in which multiple bags of N-fertiliser were stored. The cows had gained accidental contact to the shed. Post mortem examination revealed marked cyanosis of the mucous membranes and very dark coloured blood. Blood analysis confirmed a high nitrate concentration and a methaemoglobin concentration of 40% (reference < 8%).

FSI 08-87

A suspected contaminated feed incident was reported to FSA which could not be further investigated by ourselves since it was retrospectively reported. Following a delivery of animal feed there was a significant drop in milk production and malaise and scouring in the cattle. The feed was eventually withdrawn and the problem resolved. We highlighted that without investigation it was impossible to confirm whether this was actually a feed related incident or just an infectious disease outbreak. There did not appear to be a very clear date of onset in relation to the feed being introduced.

PLANT POISONING

- VLA Aberystwyth diagnosed **yew poisoning** in a three month old Stabiliser calf. 43 suckler calves with their dams were grazing rented land and five had died over a period of three days. It was reported that branches from a neighbouring property had been put on a bonfire in the field. The lungs showed oedema of the interlobular septa. The rumen contained about a dozen small sprigs of yew and a few yew berries and detached yew leaves.
- Just released: Committee on Toxicity (COT) statement on the risk to consumers of eating foods derived from animals that have eaten bracken.
<http://cot.food.gov.uk/pdfs/cotstatementbracken200805.pdf>

“Stories in the press”

VLA warns of lead pellet poisoning – Poultry World September 2008

Reference to two cases of lead shot poisoning in free range laying hens and geese intended for the Christmas market.

Melamine in milk and milk products–

Further information available on

[http://www.food.gov.uk/news/newsarchive/2008/oct/melamine.](http://www.food.gov.uk/news/newsarchive/2008/oct/melamine)

Chemical Food Safety Team

Jo Payne
Tel. 01509 672332
E-mail j.payne@vla.defra.gsi.gov.uk

Chris Livesey
Tel. 01932 357530
E-mail c.t.livesey@vla.defra.gsi.gov.uk

Arthur Otter
Tel. 01743 47621
E-mail a.otter@vla.defra.gsi.gov.uk